

WHAT IS CLAIMED IS:

1. A control area network comprising:

a master controller;

5 a first device and a second device coupled to said master controller, said first device having a first state representing a plurality of data values associated with said first device and said second device having a second state representing a plurality of data values associated with said second device; and

10 a virtual device associated with said first and second devices, said virtual device having a virtual device state representing a plurality of data values associated with said virtual device, said virtual device linking said virtual device state to said first and second states.

20 2. The control area network according to claim 1, wherein said first and second devices are each a port and said virtual device is a virtual port.

25 3. The control area network according to claim 1, wherein said first and second devices are each levels and said virtual device is a virtual level.

4. The control area network according to claim 1, wherein said first and second devices are each channels and said virtual device is a virtual channel.

30 5. The control area network according to claim 1 further including a device manager associated with said master controller.

6. The control area network according to claim 5 wherein said device manager is operable to utilize said virtual device to maintain said virtual device state and said first and second states in a substantially similar condition.

7. The control area network according to claim 5 further including a data state change request being received by said virtual device, a first generated data state change request being generated by said device manager based on said data state change request and sent to said first device, and a second generated data state change request being generated by said device manager based on said data state change request and sent to said second device.

8. The control area network according to claim 7, wherein said data state change request is a command sent by said master controller in the control area network.

9. The control area network according to claim 7, wherein said virtual device state is updated in response to said data state change request, said first state is updated in response to said first generated data state change request and said second state is updated in response to said second data state change request.

10. The control area network according to claim 7,
wherein said first and second generated data state
changes request are generated by replicating said data
state change request received by said virtual device such
5 that said first and second generated data state change
requests are substantially similar to said data state
change request.

10 11. The control area network according to claim 10,
wherein said first and second devices are each operable
to respond to input by changing said respective first and
second states, wherein the change in said first state
effects substantially similar changes in said virtual
device state, and wherein the change in said second state
15 effects substantially similar changes in said virtual
device state.

20 12. The control area network according to claim 11,
wherein said input is an external input from an
associated external device.

13. The control area network according to claim 11,
wherein said input is an external input from a user.

14. The control area network according to claim 10 further including level input, wherein each of said virtual device state and said first and second states include a level data portion therein, wherein said first and second devices are each operable to respond to said input by changing said level data portion of said respective first and second states, wherein the change in said level data portion of said first state is replicated in said level data portion of said virtual device state by said device manager and the change in said level data portion of said first state is replicated in said level data portion of said second device state by said device manager, and wherein the change in said level data portion of said second state is replicated in said level data portion of said virtual device state by said device manager and the change in said level data portion of said second state is replicated in said level data portion of said first device state by said device manager such that each of said level data portions of said virtual device state, said first device state and said second device state are maintained in a substantially similar condition.

15. The control area network according to claim 10 further including channel change input, wherein each of said virtual device state and said first and second states include a channel data portion therein, wherein said first and second devices are each operable to respond to said channel change input by changing said channel data portion of said respective first and second states, wherein the change in said channel data portion of said first state is replicated in said channel data

portion of said virtual device state by said device manager, and wherein the change in said channel data portion of said second state is replicated in said channel data portion of said virtual device state by said device manager.

16. The control area network according to claim 10 further including string change input, wherein each of said virtual device state and said first and second states include a string data portion therein, wherein said first and second devices are each operable to respond to said string change input by changing said string data portion of said respective first and second states, wherein the change in said string data portion of said first state is replicated in said string data portion of said virtual device state by said device manager, and wherein the change in said string data portion of said second state is replicated in said string data portion of said virtual device state by said device manager.

17. The control area network according to claim 10 further including command change input, wherein each of said virtual device state and said first and second states include a command data portion therein, wherein said first and second devices are each operable to respond to said command change input by changing said command data portion of said respective first and second states, wherein the change in said command data portion of said first state is replicated in said command data portion of said virtual device state by said device manager, and wherein the change in said command data

portion of said second state is replicated in said command data portion of said virtual device state by said device manager.

5 18. The control area network according to claim 5, wherein said linking between said virtual device and said first and second devices may be created at run-time.

10 19. The control area network according to claim 5, wherein said linking between said virtual device and said first and second devices may be modified at run-time.

15 20. The control area network according to claim 5, wherein said linking between said virtual device and said first and second devices may be defined only at compile time and may only be changed by resetting said master controller.

21. A control area network comprising:

a master controller;

a plurality of devices coupled to said master controller, each said device having a respective state representing a plurality of data values associated with said respective devices; and

a virtual device associated with a set of said devices, said virtual device having a virtual device state representing a plurality of data values associated with said virtual device, said virtual device linking said virtual device state and said respective states associated with said set.

22. The control area network according to claim 21, wherein said virtual device state and said respective states are maintained in a substantially similar condition.

23. The control area network according to claim 21 further including a device manager associated with said master controller and said virtual device being further associated with said device manager.

24. The control area network according to claim 23 further including a data state change request received by said virtual device, a plurality of respective device state change requests generated by said virtual device for each device in said set in response to said data state change request and wherein said device state change requests are sent to said each device in said set.

25. The control area network according to claim 24, wherein said data state change request is a command sent by said master controller in the control area network.

5 26. The control area network according to claim 24, wherein said virtual device updates said virtual device state in response to said data state change request and each of said devices in said set update said respective states in response to said device state change requests.

10 27. The control area network according to claim 24, wherein said device state change requests are generated by replicating said data state change request received by said virtual device such that each said device state change request is substantially similar to said data state change request.

15 28. The control area network according to claim 27 further including level input, wherein each of said virtual device state and said respective states include a level data portion therein, wherein said devices in said set are each operable to respond to said level input by changing said level data portion of said respective states, wherein the change in said level data portion of state of one of said devices in said set is effected in
20 said level data portion of said state associated with each of said devices in said set distinct from said one of said devices in said set and in said level data portion of said virtual device state such that each of
25 said level data portions of said respective states associated with said devices in said set and said virtual
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device state are maintained in a substantially similar condition.

29. The control area network according to claim 27
5 further including channel change input, wherein each of
said virtual device state and said respective states
include a channel data portion therein, wherein said
devices in said set are each operable to respond to said
channel input by changing said channel data portion of
10 said respective states, wherein the change in said
channel data portion of state of one of said devices in
said set is effected in said channel data portion of said
virtual device state.

30. The control area network according to claim 27
15 further including string change input, wherein each of
said virtual device state and said respective states
include a string data portion therein, wherein said
devices in said set are each operable to respond to said
string input by changing said string data portion of said
20 respective states, wherein the change in said string data
portion of state of one of said devices in said set is
effected in said string data portion of said virtual
device state.

31. The control area network according to claim 27
25 further including command change input, wherein each of
said virtual device state and said respective states
include a command data portion therein, wherein said
30 devices in said set are each operable to respond to said
command input by changing said command data portion of
said respective states, wherein the change in said

command data portion of state of one of said devices in said set is effected in said commanddata portion of said virtual device state.

5 32. The control area network according to claim 28, wherein said level input is from an associated external device associated with said devices.

10 33. The control area network according to claim 28, wherein said level input is an external input from a user.

15 34. The control area network according to claim 21, wherein said linking between said virtual device state and said respective device states may be created at run-time.

20 35. The control area network according to claim 21, wherein said linking between said virtual device state and said respective device states may be modified at run-time.

25 36. The control area network according to claim 21, wherein said linking between said virtual device state and said respective device states may be defined only at compile time and may only be changed by resetting said master controller.

37. A method for supporting a virtual device on a master controller in a control area network comprising:

associating the virtual device to a plurality of devices;

5 linking a plurality of data states respectively associated with the virtual device and each of the plurality of devices associated with the virtual device; and

10 maintaining each respective data state in a substantially similar condition.

38. The method according to claim 37, wherein maintaining each respective data state in a substantially similar condition includes:

15 receiving a data state change request at the virtual device, wherein the data state change request effects a change in the data state of the virtual device; and

20 replicating the data state change request for each of the devices associated with the virtual device.

39. The method according to claim 38, wherein replicating the command for each of the devices associated with the virtual device further includes changing the data state of the virtual device in response to the data state change request, and wherein maintaining each respective data state in a substantially similar condition further includes changing the data state of each of the devices associated with the virtual device in response to the replicated data state change request.

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40. The method according to claim 39, wherein the data state change request is a command sent by the master controller in the control area network.

5 41. The method according to claim 37, wherein maintaining each respective data state in a substantially similar condition includes:

 receiving a data state change request at a one of the devices associated with the virtual device; and

10 sending the data state change request to the virtual device.

42. The method according to claim 41, wherein receiving a data state change request at a one of the devices associated with the virtual device includes changing the data state of the one of the devices in response to the data state change request.

15 43. The method according to claim 42, wherein the data state change request is a command sent by a master controller in the control area network.

20 44. The method according to claim 37, wherein maintaining each respective data state in a substantially similar condition includes:

25 receiving a level state change request at a one of the devices associated with the virtual device;

 sending the level state change request to the virtual device;

30 changing a level data state portion of the data state of the virtual device in response to the level state change request;

replicating the level state change request for each of the devices associated with the virtual device; and

changing a level data portion of the data state of each of the devices associated with the virtual device in response to the replicated data state change request.

45. The method according to claim 44, wherein the data state change request is a command sent by a master controller in the control area network.

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